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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellants : Wolfgang Rohde et al.
Application Number : 10/520,536
Filed : October 14, 2005
Title : MULTISTAGE PROCESS FOR PRODUCING
HOLLOW PLASTIC ARTICLES FROM HALF
SHELLS
Group Art Unit : 1791
Examiner : John L. Goff II
Docket No. : LU 6035 (US)

Mail Stop: Appeal Brief—Patents
Honorable Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

CORRECTED APPEAL BRIEF UNDER 37 C.F.R. § 41.37

This corrected Appeal Brief is filed in response to Examiner's Notification of Non-Compliant Appeal Brief under 37 CFR 41.37, mailed on August 13, 2009. Please replace the previous Appeal Brief filed on May 8, 2009, with the following replacement Appeal Brief in accordance with 37 CFR 41.37(d).

I. REAL PARTY IN INTEREST

The real party in interest is Basell Polyolefine GmbH.

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II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences known to Appellants, their representatives, or their assignee that will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

Claims 1-26 are pending in the application. Claims 20 and 21 are withdrawn from consideration by the Examiner due to restriction requirement. Claims 1-19 and 22-26 are rejected and are thus on appeal.

IV. STATUS OF AMENDMENTS

Claims 20 and 21 were withdrawn due to the Examiner's restriction requirement, claims 1-19 were amended, and claims 22-26 were added during prosecution. All claim amendments have been considered and entered by the Examiner. No further claim amendments are made in this Appeal Brief.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

Appellants' claim 1 claims an integrated process for producing hollow plastic articles. The process comprises: a) producing a tubular plastic parison, b) cutting the parison into two planar surface parts, c) molding the two parts to give two half shells which are separated by a removable intermediate frame, d) opening the mold and removing the intermediate frame, e) closing the mold halves, and f) bonding the half shells. The removable intermediate frame not only serves to separate the tubular plastic parison into two planar surface parts and keep the two semi-finished half shells from contacting each other, but more importantly, it can also be removed after the two half shells are formed so that the incorporated parts such as fuel lines, valves, cups and sensors can be easily installed on the half shells. See Specification, page 4, lines 3-31. Without the removable intermediate frame, the half shells must be taken out of the mold

halves to install the incorporated parts. The process of the invention integrates the bonding of the two half shells as in a continued operation. That is, after the removal of the intermediate frame and the installation of the incorporated parts, the two mold halves are closed and the two finished half shells are then bonded. This integrated process of the invention operates more efficiently and produces more reliable products than the conventional processes known in the art which operate the bonding of two finished half shells separately from producing the semi-finished half shells and installing the incorporated parts onto the half shells. See Specification, page 5, lines 3-7. Remaining claims 2-18 and 22-25 depend from claim 1. Claim 19 is an independent claim which is narrower than and includes the limitation of claim 1. Claim 26 depends from claim 19.

VI. GROUNDS OF REJECTIONS TO BE REVIEWED ON APPEAL

(a) The Examiner's obviousness rejection of claims 1-9, 12-19, and 23-26 under 35 U.C.S. §103 (a) over Sadr (U.S. Pat. Appl. Publication No. 2002/0105115) in view of Schaftingen et al. (U.S. Patent Appl. Publication No. 2001/0015513), or the admitted prior art (Specification pages 3-4 and in particular DE 10042121 wherein U.S. Patent No. 6,893,603 is also applied as a translation.

(b) The Examiner's obviousness rejection of claims 9, 10, 11 and 22 under 35 U.C.S. §103 (a) over Sadr and Schaftingen et al., or the admitted prior art as applied to claims 1-9, 12-19, and 23-26 above, and further in view of Shuman (U.S. Patent No. 4,170,449).

(c) The Examiner's double patenting rejections, under the doctrine of obviousness, of claims 1-9, 12, 13, 15-18, 24 and 25 over claims 1-18 of Rohde et al. (U.S. Patent No. 6,893,603) in view of Sadr, claims 10, 11, and 22 over claims 1-18 of Rohde et al., and Sadr as applied above, and further in view of Shuman, and claims 19, 23, and 26 over claims 1-18 of Rohde et al., and Sadr as applied above, and further in view of Schaftingen.

VII. ARGUMENTS

A. Applicable Law

MPEP §2142 provides: To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. In re Vaack, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

B. Claimed Invention

Appellants' claim 1 claims an integrated process for producing hollow plastic articles. The process comprises: a) producing a tubular plastic parison, b) cutting the parison into two planar surface parts, c) molding the two parts to give two half shells which are separated by a removable intermediate frame, d) opening the mold and removing the intermediate frame, e) closing the mold halves, and f) bonding the half shells.

Appellants respectfully draw the Honorable Board's attention to the following two elements which are missing from the cited references: the use of a removable intermediate frame and bonding the half shells on the mold halves.

First, the removable intermediate frame not only serves to separate the tubular plastic parison into two planar surface parts and keep the two semi-finished half shells from contacting each other, but more importantly, it can also be removed after the two half shells are formed so that the incorporated parts

such as fuel lines, valves, cups and sensors can be easily installed on the half shells.

Second, unlike the prior art processes, the process of the invention integrates the bonding of the two half shells as in a continued operation (see steps d) and e) of claim 1). That is, after the removal of the intermediate frame and the installation of the incorporated parts, the two mold halves are closed and the two finished half shells are then bonded. This integrated process of the invention operates more efficiently and produces more reliable products than the conventional processes known in the art which operate the bonding of two finished half shells separately from producing the semi-finished half shells and installing the incorporated parts onto the half shells.

Claims 1-18 and 22-25 depend from claim 1. Claim 19 is an independent claim which is narrower than and includes all limitations of claim 1. Claim 26 depends from claim 19.

C. Prior Art Teaching

(a) Sadr

Appellants do not dispute with the Examiner that Sadr discloses a process for making hollow plastic articles such as fuel tanks. In the Sadr process, a mold separator is aligned with the parison so that the mold separator is placed in the slit portions of the parison. The mold portions are then closed over the slit parison and the parison separator to form a plurality of separate molding cavities. The parison is then molded so as to conform to the cavities in the mold portions thereby simultaneously forming a plurality of molded parts from a single parison. See Sadr, paragraph [0009].

Unlike Appellants' invention, Sadr does not teach an integrated process which comprises the cutting and guiding in the presence of a removable intermediate frame, the thermal forming the half shells, the removing the frame

and the closing thereafter, and bonding by welding the half shells. These steps in claims 1 and 19 are performed continuously without any interruption. Contrarily, as the Examiner correctly recognized in the Final Office Action of December 12, 2008, Sadr does not teach, for instance, bonding by welding the half shells. See page 2, item 3 of the Final Office Action.

In such a continuous process as described in claims 1 and 19, it is important that the temperature is kept at a constant level and that essentially no heat loss occurs. This feature is described in dependent claim 6 and this feature is missing from Sadr.

Another important feature of the invention which is missing from Sadr is that the intermediate frame used in the invention is equipped with heating and cooling which supports the process running smoothly and continuously. This feature is described in dependent claim 9.

(b) Schaftingen et al.

As the Examiner correctly recognized, Schaftingen et al. also teaches a process for producing fuel tanks. More particularly, Schaftingen et al. teaches producing a tubular plastic parison by extrusion, cutting open the parison to produce two planar-surface parts, molding the planar-surface parts in two mold halves to give half shells and bonding by welding the half shells using closed mold shells. See Schaftingen et al., the Figure and paragraphs [0019] and [0021]; see also the Final Office Action, page 3, the first paragraph. Appellants respectfully note here that Schaftingen et al., like Sadr, does not teach a continuous operation after removing the intermediate frame. Because Schaftingen et al. do not use the removable intermediate frame, bonding the half shells on the mold halves along a peripheral rim is difficult since there is often insufficient plastic material along the rim for forming consistent bonding. Appellants' invention exactly provides a solution to this problem of Schaftingen et al. As discussed above, Appellants use a removable intermediate frame during

molding so that a plastic film forms along the edges the removable intermediate frame and the mold halves. After the intermediate frame is removed and the half shells closed, the films along the edges form bonding.

(c) The "Admitted Prior Art"

As the Examiner correctly recognized, Appellants discussed reference DE 100 42 121 in background of the invention. DE 100 42 121 discloses a process for producing hollow plastic article such as a fuel tank by first producing a tubular plastic parison by a blow molding or coextrusion blow molding, and then cutting this open to produce at least one planar-surface part, and then thermoforming the planar-surface parts to give half shells and welding them to one another to give a hollow article. See Specification, page 2, lines 18-22.

However, as Appellants discussed in the Specification, page 4, lines 3-11, the process of the invention eliminates the disadvantages of the known processes. The use of an intermediate frame or of a plate insert, and the opening and closing of the mold halves at various closure points, permits subdivision of the process known from DE 100 42 121 into functional steps, and this substantially facilitates incorporation of components into the interior of the hollow article, and permits a decisive improvement in the quality of the hollow article. The process of the invention also permits problem-free incorporation of relatively large components in the interior of the hollow article, substantially without contact with the unmolded semi-finished product. The Examiner apparently overlooked or ignored these discussions about the differences between Appellants' invention and DE 100 42 121.

(d) Shuman

Shuman discloses a clamping frame for use in plastic forming equipment. The clamping frame is provided with heating device to seal plastic sheets. See col. 2, lines 16-21.

D. Arguments against the Examiner's Rejections

(a) Obviousness rejection of claims 1-9, 12-19, and 23-26 under 35 U.C.S. §103 (a) over Sadr in view of Schaftingen et al., or the "admitted prior art."

First, Appellants respectfully request that the Honorable Board of Appeals review the patentability of claims 1 and 19, which are two independent claims. Appellants believe that these two independent claims are non-obvious over Sadr in view of Schaftingen et al. for the reason that follows. If the Board concludes that claims 1 and 19 are non-obvious, remaining claims 2-9, 12-18 and 23-26 will also be non-obvious because they either depend from claim 1 or from claim 19.

As discussed above, Appellants' invention is an integrated process for producing hollow plastic articles. The process comprises: a) producing a tubular plastic parison, b) cutting the parison into two planar surface parts, c) molding the two parts to give two half shells which are separated by a removable intermediate frame, d) opening the mold and removing the intermediate frame, e) closing the mold halves, and f) bonding the half shells.

In Appellants' invention, the removable intermediate frame not only serves to separate the tubular plastic parison into two planar surface parts and keep the two semi-finished half shells from contacting each other, but more importantly, it can also be removed after the two half shells are formed so that the incorporated parts such as fuel lines, valves, cups and sensors can be easily installed on the half shells. After the intermediate frame is removed, the plastic films that formed along the edges between the half shells and the frame provide sufficient material for bonding the two mold halves.

Neither Sadr, nor Schaftingen et al., nor the "admitted prior art," teaches or suggests the integrated process of claims 1 and 19. While Sadr shows the use of an intermediate frame, it does not teach or suggest using the intermediate frame in the integrated process, for instance, bonding by welding the half shells

after the intermediate frame is removed. This defect of Sadr has been correctly recognized by the Examiner. See page 2, item 3 of the Final Office Action. On the other side, neither Schaftingen et al., nor the "admitted prior act," teaches or suggests the use of removable intermediate frame. Without the intermediate frame during molding, bonding the half shells along the peripheral rim would be difficult because there is often insufficient plastic material along the rim for forming consistent bonding. Appellants' invention exactly provides a solution to this problem of Schaftingen et al. and the "admitted prior art." As discussed above, Appellants use a removable intermediate frame during molding so that a plastic film forms along the edges between the removable intermediate frame and the mold halves. After the intermediate frame is removed and the half shells closed, the films along the edges form bonding.

Thus, the combined teachings of Sadr and Schaftingen et al. or the "admitted prior act" cannot make Appellants' invention obvious under 35 U.S.C. §103(a) because to make Appellants' invention obvious, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings, there must be a reasonable expectation of success, and the prior art reference (or references when combined) must teach or suggest all the claim limitations. See MPEP §2142. The Examiner's obviousness rejection has failed to meet any of these three conditions articulated by MPEP §2142. Appellants thus respectfully ask the Honorable Board of Appeals to reverse the Examiner's obviousness rejection of claims 1 and 19 as well as their dependent claims 2-9, 12-18 and 23-26 over Sadr in view of Schaftingen et al. or the "admitted prior art."

Second, Appellants respectfully request that the Honorable Board to review the non-obviousness of dependent claims 6, 9 and 15 over Sadr as modified by Schaftingen et al., or the "admitted prior art." As discussed in above section C (a), to perform a continuous process as described in claims 1 and 19,

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it is important that the temperature is kept at a constant level and that essentially no heat loss occurs. This feature is described in dependent claim 6 in which heat from thermoforming is used to weld the half shells. This claimed feature is missing from Sadr, Schaftingen et al., and the "admitted prior art." Thus claim 6 is independently non-obvious over Sadr in view of Schaftingen et al., or the "admitted prior art."

Similarly, another important feature of the invention which is missing from Sadr, Schaftingen et al., and the "admitted prior act" is that the intermediate frame used in the invention is equipped with heating and cooling which supports the process running smoothly and continuously. This feature is described in dependent claim 9. Thus claim 9 should be independently non-obvious over Sadr in view of Schaftingen et al., or the "admitted prior act."

Still another important feature of the invention which is missing from Sadr, Schaftingen et al. and the "admitted prior act" is that the cutting of the tubular plastic parison takes place before the extrusion process is complete. It means that a cutting knife is not present and not even needed as long as the liquid plastic melt is divided already within the extrusion die next to the exit, producing thereby the half shells in situ. This feature is included in dependent claim 15. Thus claim 15 should be independently non-obvious over Sadr in view of Schaftingen et al., or the "admitted prior act."

- (b) Obviousness rejection of claims 9, 10, 11 and 22 under 35 U.C.S. §103 (a) over Sadr and Schaftingen et al., or the admitted prior art as applied to claims 1-9, 12-19, and 23-26 above, and further in view of Shuman.**

Claims 9, 10, 11 and 22 depend, directly or through intervening claims, from claim 1. As discussed above, the combination of Sadr with Schaftingen et al., or the "admitted prior act" cannot make claim 1 obvious because the combined references fail to teach or suggest an integrated process of claim 1. The combination of Sadr, Schaftingen et al., and Shuman or the combination of

Sadr, the "admitted prior art," and Shuman cannot make claim 1 obvious, and thus they cannot make claims 9, 10, 11, and 22 obvious because they depend from claim 1.

- (c) **Obviousness double patenting rejection of claims 1-9, 12, 13, 15-18, 24 and 25 over claims 1-18 of Rohde et al. in view of Sadr, claims 10, 11, and 22 over claims 1-18 of Rohde et al., and Sadr as applied above, and further in view of Shuman, and claims 19, 23, and 26 over claims 1-18 of Rohde et al., and Sadr as applied above, and further in view of Schafingen.**

The Examiner has rejected, under the doctrine of obviousness double patenting, claims 1-9, 12, 13, 15-18, 24 and 25 over claims 1-18 of Rohde et al. in view of Sadr, claims 10, 11, and 22 over claims 1-18 of Rohde et al., and Sadr as applied above, and further in view of Shuman, and claims 19, 23, and 26 over claims 1-18 of Rohde et al., and Sadr as applied above, and further in view of Schafingen. On October, 9, 2008, Appellants filed a terminal disclaimer which permits claims 1-13, 15-19, and 22-26 to expire at the same time claims 1-18 of Rohde et al. (U.S. Patent No. 6,893,603) expire. The terminal disclaimer was rejected because the signing attorney had not perfected a power of attorney. On April 30, 2009, Appellants submitted the power of attorney for the signing attorney. The obviousness double patenting rejections of those claims should be thus withdrawn.

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In view of the above arguments, Appellants respectfully request that the Honorable Board of Appeals reverse the Examiner's above obviousness rejections and obviousness double patenting rejections and allow Appellants' claims 1-19 and 22-26.

Respectfully submitted,
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Enclosures: Appendices VIII-X

VIII. CLAIMS APPENDIX

1. A process for producing hollow plastic articles, comprising the following steps:
 - a) producing a tubular plastic parison by means of extrusion or coextrusion;
 - b) cutting open the tubular plastic parison to produce two planar-surface parts;
 - c) molding the planar-surface parts in two mold halves to give half shells, where a removable intermediate frame separates the mold halves from one another at least along peripheral edges, wherein the planar-surface parts and half shells are not in contact with one another;
 - d) opening the mold halves and removing the intermediate frame;
 - e) closing the mold halves, wherein the half shells come into contact with one another along a peripheral rim; and
 - f) bonding the half shells.
2. The process as claimed in claim 1, wherein, after removal of the intermediate frame, incorporated parts are attached to the inside of at least one of the molded half shells.
3. The process as claimed in claim 2, wherein the incorporated parts are chosen from ventilation lines for pressure equilibration within a tank, fuel lines for equilibration of liquids within the tank, valves, anti-surge cups, pump-related sensor modules and tank sensor modules.
4. The process as claimed in claim 1, wherein the planar-surface parts are molded in the mold halves to give half shells by means of at least one of thermoforming and blow molding.

5. The process as claimed in claim 1, wherein the bonding of the half shells comprises at least one of adhesive bonding and welding.
6. The process as claimed in claim 4, wherein heat from thermoforming is used to weld the half shells.
7. The process as claimed in claim 1, further comprising molding of the hollow article by at least one of thermoforming and blow molding after bonding of the half shells.
8. The process as claimed in claim 1, wherein the intermediate frame used comprises a plate insert which substantially provides complete filling of an area between the two mold halves.
9. The process as claimed in claim 1, wherein the intermediate frame comprises equipment for cooling or heating.
10. The process as claimed in claim 1, wherein the intermediate frame comprises equipment for controlled heating of the edges of the molded half shells.
11. The process as claimed in claim 1, wherein the intermediate frame comprises equipment for heating a pinch-off edge of at least one mold half.
12. The process as claimed in claim 8, wherein the intermediate frame or the plate insert is of single-part or multipart design.
13. The process as claimed in claim 1, which proceeds without additional heating steps or cooling steps.
14. The process as claimed in claim 1, wherein, during cutting open of the tubular plastic parison, use is made of driven units of a roller type for guiding over the cutting device.

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15. The process as claimed in claim 1, wherein the cutting of the tubular plastic parison takes place before the extrusion process is complete.
16. The process as claimed in claim 1, wherein the plastic parison comprises at least one layer made from polymeric material.
17. The process as claimed in claim 1, wherein the plastic parison comprises a structure of at least two layers.
18. The process as claimed in claim 1, wherein the plastic parison comprises a structure of at least two layers wherein the at least two layers are arranged, from the outside to the inside:
 - (1) a layer made from HDPE with thickness from 5 to 30%,
 - (2) a regrind layer with thickness from 10 to 82%,
 - (3) an adhesion-promoter layer with thickness from 1 to 5%,
 - (4) a barrier layer with thickness from 1 to 10%,
 - (5) an adhesion-promoter layer with thickness from 1 to 5%,
 - (6) a layer made from HDPE with thickness from 10 to 40%,based in each case on a total thickness of the plastic article wall.
19. A process for producing hollow plastic articles, comprising the following steps:
 - a) producing, by means of extrusion or coextrusion, a tubular plastic parison comprising at least one layer made from polymeric material;
 - b) cutting open the tubular plastic parison to give two planar-surface parts by means of a suitable cutting device, and using driven floating rollers for guiding of the parison over the cutting device;

- c) molding the planar-surface parts in two mold halves to give half shells, where a removable intermediate frame separates the mold halves from one another, at least along the peripheral edges, wherein the planar-surface parts and half shells are not in contact with one another;
 - d) opening the mold halves and removing the intermediate frame;
 - e) closing the mold halves, with the result that the half shells come into contact with one another along a peripheral rim; and
 - f) welding the half shells.
20. (Withdrawn) A hollow plastic article produced by a process comprising:
- a) producing a tubular plastic parison by means of extrusion or coextrusion;
 - b) cutting open the tubular plastic parison to produce two planar-surface parts;
 - c) molding the planar-surface parts in two mold halves to give half shells, where a removable intermediate frame separates the mold halves from one another at least along peripheral edges, wherein the planar-surface parts and half shells are not in contact with one another;
 - d) opening the mold halves and removing the intermediate frame;
 - e) closing the mold halves, wherein that the half shells come into contact with one another along a peripheral rim; and
 - f) bonding the half shells.
21. (Withdrawn) The article of claim 20 selected from the group consisting of a plastic fuel tank in motor vehicles, a gasoline canister, a plastic tank for storage or transport of heating oil, diesel, a transport container on a utility vehicle, a solvent container, and a plastic bottle.

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22. The process as claimed in claim 11 wherein the intermediate frame has equipment for heating a pinch-off edge of both mold halves.
23. The process as claimed in claim 14 wherein the driven units are driven floating rollers.
24. The process as claimed in claim 16 wherein the polymeric material is selected from the group consisting of polyethylene, polypropylene, polyvinyl chloride, polyamide, polyketone, polyester, and mixtures thereof.
25. The process as claimed in claim 17 wherein the at least two layers comprise a base layer and at least one of a regrind layer, an adhesion-promoter layer and a barrier layer.
26. The process as claimed in claim 19 wherein the polymeric materials are selected from the group consisting of polyethylene, polypropylene, polyvinyl chloride, polyamide, polyketone, polyester, and mixtures thereof.

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IX. EVIDENCE APPENDIX

None.

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X. RELATED PROCEEDINGS APPENDIX

None.